line 7, delete in its entirety insert --time taken to reconstruct the faulty data--;

line 8, delete "sing time";

line 9, delete "the" insert --a--;

line 12, after "tion" insert --within the unit time--.

IN THE CLAIMS

Please cancel claim 1 without prejudice or disclaimer of the subject matter thereof.

Please add new claims 18-36 as follows:

--18. A data reconstruction system comprising:

a plurality of storage units having stored therein divided data and error correcting data for the divided data, the divided data being data divided into one of bit units, byte units, and arbitrary units stored in separate ones of the storage units;

data reconstructing means for reconstructing divided data stored in any of the storage units in which a failure has occurred based on (1) divided data stored in other ones of the storage units in which a failure has not occurred and (2) the error correcting data, and storing the reconstructed divided data in at least one of the storage units;

monitoring means for monitoring operation of the storage units and producing an output when a failure has occurred in any of the storage units;

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means, responsive to the output of the monitoring means, for determining a total number of the storage units in which a failure has occurred;

means for storing a predetermined value based on a total number of the storage units in which the error correcting data is stored; and

control means for controlling the data reconstructing means to

reconstruct the divided data without stopping if the total number of the storage units in which a failure has occurred is not less than the predetermined value, and

temporarily stop reconstructing the divided data to allow the storage units to be accessed if the total number of the storage units in which a failure has occurred is less than the predetermined value.

19. A data reconstruction system according to claim 18, further comprising:

timing means for producing a timing signal indicative of a time of day;

wherein the control means is responsive to the timing signal and includes means for storing, for each failure which has occurred,

information identifying a particular one of the storage units in which the failure occurred,

a time of day the failure occurred,

information identifying an address, in the particular one of the storage units in which the failure occurred, of divided data affected by the failure, and

information identifying a particular one of the storage units in which reconstructed divided data corresponding to the divided data affected by the failure is to be stored.

20. A data reconstruction system according to claim 18, further comprising:

timing means for generating a timing signal indicative of a time of day; and

means for storing information indicative of a predetermined time period in which an access frequency of the storage units is higher than a predetermined access frequency;

wherein the control means is responsive to the timing signal means and, for each failure which has occurred, determines if the failure occurred within the predetermined time period and controls the data reconstructing means to

temporarily stop reconstructing the divided data to allow the storage units to be read/write accessed if the total number of the storage units in which a failure has occurred is less than the predetermined value and the failure occurred within the predetermined time period,

temporarily stop reconstructing the divided data only to allow the storage units to be read accessed if the total number of the storage units in which a failure has

occurred is less than the predetermined value and the failure did not occur within the predetermined time period, and

reconstruct the divided data without stopping if the total number of the storage units in which a failure has occurred is not less than the predetermined value.

4.

~~21~~. A data reconstruction system comprising:

a plurality of storage units having stored therein divided data and error correcting data for the divided data, the divided data being data divided into one of bit units, byte units, and arbitrary units;

data reconstructing means for reconstructing divided data stored in any of the storage units in which a failure has occurred based on (1) divided data stored in other ones of the storage units in which a failure has not occurred and (2) the error correcting data, and storing the reconstructed divided data in at least one of the storage units;

monitoring means for monitoring operation of the storage units and producing an output when a failure has occurred in any of the storage units; and

control means for

receiving requests for accessing the storage units from a host unit,

setting a data reconstruction frequency at which the data reconstructing means is to reconstruct the divided data,

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determining, for each failure which has occurred, a nature of the failure based on the output of the monitoring means, and

controlling the data reconstructing means to switch between a first operating mode and a second operating mode in accordance with the data reconstruction frequency and the nature of the failure,

wherein in the first operating mode, the data reconstructing means reconstructs the divided data, and

wherein in the second operating mode, the data reconstructing means temporarily stops reconstructing the divided data to allow the host unit to access the storage units.

5. 4
~~22~~. A data reconstruction system according to claim ~~21~~, wherein the control means determines an elapsed time since the data reconstructing means began to reconstruct the divided data, and controls the data reconstructing means to switch between the first operating mode and the second operating mode in accordance with the data reconstruction frequency, the nature of the failure, and the elapsed time.

6.
~~23~~. A data reconstruction method comprising the steps of:

monitoring operation of a plurality of storage units having stored therein divided data and error correcting data for the divided data, and detecting when a failure has

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occurred in any of the storage units, the divided data being data divided into one of bit units, byte units, and arbitrary units;

determining a total number of the storage units in which a failure has occurred;

setting a data reconstruction frequency at which divided data stored in any of the storage units in which a failure has occurred is to be reconstructed;

if the total number of the storage units in which a failure has occurred is less than a first predetermined value, reconstructing the divided data based on (1) divided data stored in other ones of the storage units in which a failure has not occurred and (2) the error correcting data; and

storing the reconstructed divided data in at least one of the storage units;

wherein the reconstructing step includes the steps of

(1) reconstructing the divided data without stopping, and

(2) temporarily stopping reconstructing the divided data to allow the storage units to be accessed; and

wherein each of the steps (1) and (2) of the reconstructing step is performed based on (1) the total number of the storage units in which a failure has occurred and (2) the data reconstruction frequency.

24. 7. A data reconstruction method according to claim 23, 6 wherein each of the steps (1) and (2) of the reconstructing step is performed based on (1) whether the total number of the storage units in which a failure has occurred exceeds a second predetermined value and (2) the data reconstruction frequency.

25. 8. A data reconstruction method according to claim 23, 6 further comprising the step of determining an elapsed time since a beginning of the reconstructing step;

wherein each of the steps (1) and (2) of the reconstructing step is performed based on (1) the total number of the storage units in which a failure has occurred, (2) the data reconstruction frequency, and (3) the elapsed time since the beginning of the reconstructing step.

26. 9. A data reconstruction method according to claim 23, 6 further comprising the step of determining a time of day during which the reconstructing step is being performed;

wherein each of the steps (1) and (2) of the reconstructing step is performed based on (1) the total number of the storage units in which a failure has occurred, (2) the data reconstruction frequency, and (3) the time of day during which the reconstructing step is being performed.

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10. 6
~~27.~~ A data reconstruction method according to claim ~~23~~, further comprising the steps of:

determining an elapsed time since a beginning of the reconstructing step; and

determining an access frequency at which the storage units are being accessed during the reconstructing step;

wherein each of the steps (1) and (2) of the reconstructing step is performed based on (1) the total number of the storage units in which a failure has occurred, (2) the data reconstruction frequency, (3) the elapsed time since the beginning of the reconstructing step, and (4) the access frequency at which the storage units are being accessed during the reconstructing step.

11. 10
~~28.~~ A data reconstruction method according to claim ~~27~~, wherein the step of setting the data reconstruction frequency includes the step of dynamically setting the data reconstruction frequency based on the access frequency if the access frequency is less than a predetermined access frequency.

12.
~~29.~~ A data reconstruction method comprising the steps of:

monitoring operation of a plurality of storage units having stored therein divided data and error correcting data for the divided data, and detecting when a failure has occurred in any of the storage units, the divided data being

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data divided into one of bit units, byte units, and arbitrary units;

if a failure is detected in any of the storage units, defining a plurality of first time zones and a plurality of second time zones alternating with the first time zones;

during each of the first time zones, reconstructing a part of the divided data stored in any of the storage units in which a failure has occurred by performing the steps of

reading divided data stored in other ones of the storage units in which a failure has not occurred,

reading error correcting data stored in the storage units,

reconstructing the part of the divided data based on the divided data read from the other ones of the storage units in which a failure has not occurred and the error correcting data read from the storage units, and

storing the reconstructed part of the divided data in at least one of the storage units;

during each of the second time zones, allowing the storage units to be accessed by a host unit in response to access requests received from the host unit; and

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if an access request received from the host unit is a read request for reading a part of the divided data stored in any of the storage units in which a failure has occurred which has not been reconstructed in a first time zone, reconstructing the part of the divided data which has not been reconstructed in a first time zone by performing the steps of

reading divided data stored in the other ones of the storage units in which a failure has not occurred,

reading error correcting data stored in the storage units,

reconstructing the part of the divided data which has not been reconstructed in a first time zone based on the divided data read from the other ones of the storage units in which a failure has not occurred and the error correcting data read from the storage units, and

sending the reconstructed part of the divided data which has not been reconstructed in a first time zone to the host unit.

13. ~~30.~~ A data reconstruction method according to claim 12 ~~29~~, wherein the step of defining the first time zones and the second time zones includes the steps of:

storing at least one parameter relating to transitions between the first time zones and the second time zones; and

controlling the transitions between the first time zones and the second time zones in accordance with the at least one parameter.

14. ~~31.~~ A data reconstruction method according to claim 13 ~~30~~, wherein the at least one parameter includes a timing parameter relating to a timing of the transitions between the first time zones and the second time zones; and

wherein the step of controlling the transitions between the first time zones and the second time zones includes the step of controlling the timing of the transitions between the first time zones and the second time zones in accordance with the timing parameter.

15. ~~32.~~ A data reconstruction method according to claim 14 ~~31~~, wherein the timing parameter is a data reconstruction frequency at which divided data stored in any of the storage units in which a failure has occurred is to be reconstructed in the first time zones; and

wherein the step of controlling the timing of the transitions between the first time zones and the second time zones includes the step of controlling the transitions between the first time zones and the second time zones to occur at the data reconstruction frequency.

16. 13
~~33.~~ A data reconstruction method according to claim ~~30~~, wherein the at least one parameter includes a duration parameter relating to a duration of each of the first time zones; and

wherein the step of controlling the transitions between the first time zones and the second time zones includes the step of controlling the duration of each of the first time zones in accordance with the duration parameter.

17. 16
~~34.~~ A data reconstruction method according to claim ~~33~~, wherein the duration parameter is a parameter relating to an amount of data to be reconstructed during each of the first time zones; and

wherein the step of controlling the duration of each of the first time zones includes the step of controlling the duration of each of the first time zones in accordance with the parameter relating to the amount of data to be reconstructed during each of the first time zones.

18. 12
~~35.~~ A data reconstruction method according to claim ~~29~~, wherein the step of defining the first time zones and the second time zones includes the steps of:

monitoring an elapsed time since a failure was detected in any of the storage units; and

controlling transitions between the first time zones and the second time zones in accordance with the elapsed time;

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wherein if the elapsed time exceeds a predetermined limit time, the step of controlling transitions between the first time zones and the second time zones in accordance with the elapsed time includes the step of delaying a transition from a current first time zone to a second time zone to allow any remaining parts of the divided data stored in any of the storage units in which a failure has occurred which have not been reconstructed to be reconstructed in the current first time zone.

19. ~~36.~~ A data reconstruction method according to claim 18 ~~35~~, wherein the step of defining the first time zones and the second time zones further includes the steps of:

monitoring an access frequency at which access requests are received from the host unit; and

controlling transitions between the first time zones and the second time zones in accordance with the access frequency;

wherein if the access frequency exceeds a predetermined access frequency, the step of controlling transitions between the first time zones and the second time zones in accordance with the access frequency includes the step of delaying a transition from a current second time zone to a first time zone to allow the storage units to be accessed by the host unit in the current second time zone.--

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